A. ELECTRICAL CABLES AND CONNECTIONS NOT SUBJECT TO 10 CFR 50.49 Environmental Qualification Requirements

Systems, Structures and Components

This section addresses electrical cables and connections that are not subject to the environmental qualification requirements of 10 CFR 50.49, and that are installed in power and instrumentation and control (I&C) applications. The power cables and connections addressed are low-voltage (<1000V) and medium-voltage (2kV to 15kV). High voltage (>15kV) power cables and connections have unique, specialized constructions and must be evaluated on an application specific basis.

Electrical cables and their required terminations (i.e., connections) are typically reviewed as a single commodity. The types of connections included in this review are splices, mechanical connectors**, fuse holders,** and terminal blocks. This common review is translated into program actions, which treat cables and connections in the same manner.

Electrical cables and connections that are in the plant's environmental qualification (EQ) program are addressed in VI.B.

System Interfaces

Electrical cables and connections functionally interface with all plant systems that rely on electric power or instrumentation and control. Electrical cables and connections also interface with and are supported by structural commodities (e.g., cable trays, conduit, cable trenches, cable troughs, duct banks, cable vaults and manholes) that are reviewed, as appropriate, in the Structures and Components Supports section.

77	Electrical and I&C	Cables and Connections, Bus, electrical portions of Electrical and I&C Penetration Assemblies (e.g., electrical penetration assembly cables and connections, connectors, electrical splices, **fuse holders,** terminal blocks, power cables, control cables, instrument cables, insulated cables, communication cables, uninsulated ground conductors, transmission conductors, isolated-phase bus, nonsegregated-phase bus, segregated-phase bus, switchyard bus)	Yes
78	Electrical and I&C	Chargers, Converters, Inverters (e.g., converters-voltage/current, converters-voltage/pneumatic, battery chargers/inverters, motor-generator sets)	No
79	Electrical and I&C	Circuit Breakers (e.g., air circuit breakers, molded case circuit breakers, oil-filled circuit breakers)	No
80	Electrical and I&C	Communication Equipment (e.g., telephones, video or audio recording or playback equipment, intercoms, computer terminals, electronic messaging, radios, transmission line traps and other power-line carrier equipment)	No
81	Electrical and I&C	Electric Heaters	No Yes for a Pressure Boundary if applicable
82	Electrical and I&C	Heat Tracing	No
83	Electrical and I&C	Electrical Controls and Panel Internal Component Assemblies (may include internal devices such as, but not limited to, switches, breakers, indicating lights, etc.) (e.g., main control board, HVAC control board)	No
84	Electrical and I&C	Elements, RTDs, Sensors, Thermocouples, Transducers (e.g., conductivity elements, flow elements, temperature sensors, radiation sensors,watt transducers, thermocouples, RTDs, vibration probes, amp transducers, frequency transducers, power factor transducers, speed transducers, var. transducers, vibration transducers, voltage transducers)	No Yes for a Pressure Boundary if applicable
85	Electrical and I&C	Fuses	No
86	Electrical and I&C	Generators, Motors (e.g., emergency diesel generators, ECCS and emergency service water pump motors, small motors, motor-generator sets, steam turbine generators, combustion turbine generators, fan motors, pump motors, valve motors, air compressor motors)	No